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PROVISIONAL SPECIFICATION.

Improvements in Fumigants and Fumigators.

I, CHARLES THOMAS KINGZETT, F.I.C., of Elmstead Knoll, Chislehurst, in the County of Kent, Chemical Manufacturer, do hereby declare the nature of this invention to be as follows:—

This invention relates to improvements in disinfecting sick rooms, hospital
5 wards and other places by fumigation also to the destruction of insect life and
parasites in stables, green houses, and the like and consists of means for gene-
rating sulphurous acid (sulphur dioxide) gas, in association either with the
vapours of formaldehyde or paraformaldehyde or other chemical agent and the
employment of particular apparatus therefor. I employ sulphur candles as
10 described in my Specifications Nos. 11807 of 1893, 14903 of 1893 and 10445 of
1894, or as otherwise prepared and use the heat which is generated by the burning
sulphur to cause the evaporation or volatilisation of the paraformaldehyde or
corrosive sublimate or other disinfectant or parasiticide which latter is first of
all suitably prepared and is then placed in another container in juxta position to
15 the vessel containing the sulphur candle, for example it may be inserted in it
or be placed above it or take the form of a jacket surrounding it, taking adequate
care to utilise the heat in such manner that possible decomposition of the para-
formaldehyde or such other chemical agent as may be employed, does not result,
through exposing it to too high a temperature.

20 In one form of apparatus the metallic vessel for the sulphur candle is sur-
rounded by two concentric annular vessels the inner one for the paraformalde-
hyde preparation or the like and the outer one for water or the vessels containing
the paraformaldehyde preparation or the like and the water may be placed above
the candle.

25 In some cases also I mix the paraformaldehyde preparation with sulphur or
wax. When the mixture is heated the paraformaldehyde is volatilised as soon
as the proper temperature is reached.

Dated this Sixth day of July 1899.

C. T. KINGZETT.

30 COMPLETE SPECIFICATION.

Improvements in Fumigants and Fumigators.

I, CHARLES THOMAS KINGZETT, F.I.C., of Elmstead Knoll, Chislehurst, in the
County of Kent, Chemical Manufacturer, do hereby declare the nature of this
invention and in what manner the same is to be performed to be particularly
35 described and ascertained in and by the following statement:—

This invention relates to improvements in disinfecting sick rooms, hospital
wards, and other places, by fumigation, also to the destruction of insect life and
parasites in stables, greenhouses, and the like, and consists of means for generat-

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ing sulphurous acid (sulphur-dioxide) gas, in association either with the vapours of formaldehyde or paraformaldehyde or other chemical agent, and the employment of particular apparatus therefor.

I employ sulphur candles or fumigators as described in my Specifications Nos. 11807 of 1893, 14903 of 1893, and 10445 of 1894, or as otherwise prepared and use the heat which is generated by the burning sulphur to cause the evaporation or volatilisation of the paraformaldehyde or corrosive sublimate or other disinfectant or parasiticide which latter is first of all suitably prepared and is then placed in another container in juxtaposition or near to the vessel containing the sulphur candle; for example above it, or in a jacket surrounding it, or in a distinct capsule or other container inserted in the body of the sulphur candle taking adequate care to utilise the heat of the burning candle in such manner that decomposition of the para-formaldehyde or such other chemical agent as may be employed does not result through exposure to too high a temperature.

It is obvious that other means of heating than by the use of sulphur candles may be employed in this connection as for example lamps of wick and methylated or other spirit and the result will be the same except that there will be no generation of sulphurous acid and consequently the disinfecting action of the vapour will be confined to the formaldehyde or other disinfectant which is generated from the contents of the other vessel.

This invention also relates to the preparation of the chemical substances that are employed in connection with the special apparatus before mentioned and the manner in which they are used.

By way of illustration I append two drawings of two forms of fumigating appliance such as I have herein described.

Figure 1 illustrates what may be called a double tin, in the outer annular space of which there is poured, whilst in a pasty or semi-liquid state, a mixture A of plaster of Paris (with or without other inert material) with para-formaldehyde or other suitable disinfectant which said mixture subsequently sets in a solid condition; the inner tin is filled with a mass B of sulphur (which may be poured in whilst in the molten state) provided with a suitable wick or lighter such for example as are described in the specifications above referred to.

Upon lighting the sulphur candle the sulphur melts and continues to burn until the whole of it is consumed with the result that the plaster of Paris or other mixture therein contained is strongly heated and there is evaporated or volatilised therefrom the para-formaldehyde or other disinfectant which it contains or with which it may be saturated immediately before use. As examples of such other disinfectants that may be employed instead of para-formaldehyde, menthol, thymol and corrosive sublimate may be mentioned.

Before use, it is advisable to moisten the plaster of Paris casting either with water or in some cases (as for example when para-formaldehyde is contained in the plaster mixture) with a solution of formaldehyde.

The water or this said solution of formaldehyde may be added in such quantity that it stands above the level of the plaster casting or other contents.

The result of using water or a solution of formaldehyde as thus described is that water vapour in the one case is given off in association with the disinfecting fumes or vapours, and in the other case the vapour of the formaldehyde solution is generated in addition to the vapour derived from the employment of the para-formaldehyde or other disinfectant and the fumes or vapours from the burning sulphur candle.

In this way rooms, hospital wards, *etc.* may be disinfected with double security, for the use of this appliance secures disinfection not only by means of the sulphurous acid gas which is generated from the burning sulphur but also by means of the disinfecting fumes which are generated from the contents of the outer tin as above described. For a given cubical space therefore it is not necessary to use so much sulphur as when that substance is alone employed for disinfecting, and on the other hand it is not necessary to use so much formaldehyde or para-for-

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maldehyde or other disinfectant as when either of these substances is alone employed.

Figure 2 represents another form of fumigating appliance based upon this invention and consists of a triple tin the middle annular space of which is filled with a sulphur candle B as above described, the outer annular space C may be charged either with water or with a solution of formaldehyde or other appropriate liquid disinfectant whilst the inner smaller vessel is charged with para-formaldehyde A or any one of several mixtures for example (1) para-formaldehyde and sulphur roughly melted together into a mass, (2) para-formaldehyde and hard paraffin wax roughly melted together, (3) para-formaldehyde and plaster admixed with water as above described and set into a mass, (4) corrosive sublimate with or without admixture with plaster (5) thymol, menthol or camphor either of these substances alone or in admixture with para-formaldehyde or other volatile disinfectant substance and with or without a coating or matrix of plaster or other inert material.

When the mixture (1) is used, the sulphur with which the para-formaldehyde is admixed first of all melts and then the para-formaldehyde is gradually vapourised from the surface of the hot molten sulphur long before any appreciable quantity of the sulphur itself becomes sublimed.

When the mixture (2) is used the wax first of all melts and afterwards the para-formaldehyde is gradually vapourised from the surface of the molten wax long before there is any volatilisation or destructive decomposition of the wax medium.

When the mixture (3) becomes heated the para-formaldehyde is gradually vapourised from the plaster which is left behind as a non-volatile residue.

In all the other instances, of which examples are given, the disinfectants which are named are sublimed or volatilised by reason of the heat which is generated from the burning candle leaving behind any non-volatile coating or medium with which they may be associated for the purpose of moderating the heat and making the volatilisation gradual in character.

In this form of appliance when the sulphur candle is lighted the heat which is generated serves the double purpose of evaporating the water or the disinfectant solution which is contained in the outer annular space and the vapourisation or volatilisation of the disinfectant or disinfectants which are contained in the inner container as above described.

The vapours from the said inner container are generated and flow through the small tube D passing out from under the lid E thereof, so that if the vapours are combustible they are thus conducted to a point at which it is impossible for them to take fire.

Obviously many other forms of fumigating appliances all based upon this invention may be designed.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare that what I claim is:—

1. The combination with a sulphur candle or fumigator of other fumigants such as formaldehyde and para-formaldehyde in such manner that the heat of the burning sulphur vaporises the said other fumigants substantially as described.

2. Fumigants consisting of mixtures of volatile disinfectants such as para-formaldehyde and corrosive sublimate with sulphur, wax, plaster of Paris or like material substantially as described.

3. Fumigants and fumigators substantially as described and illustrated in the drawings.

Dated this 16th day of March 1900.

C. T. KINGZETT.

Fig. 2.

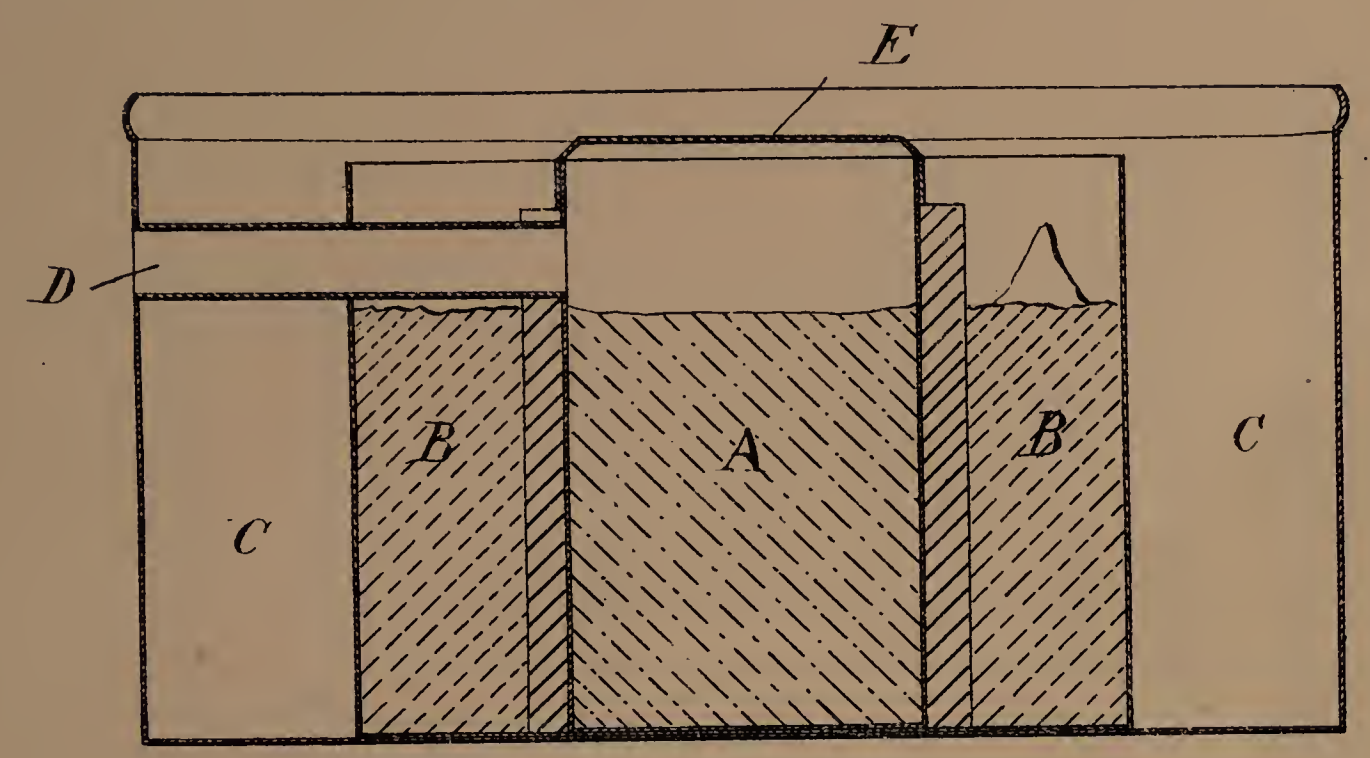
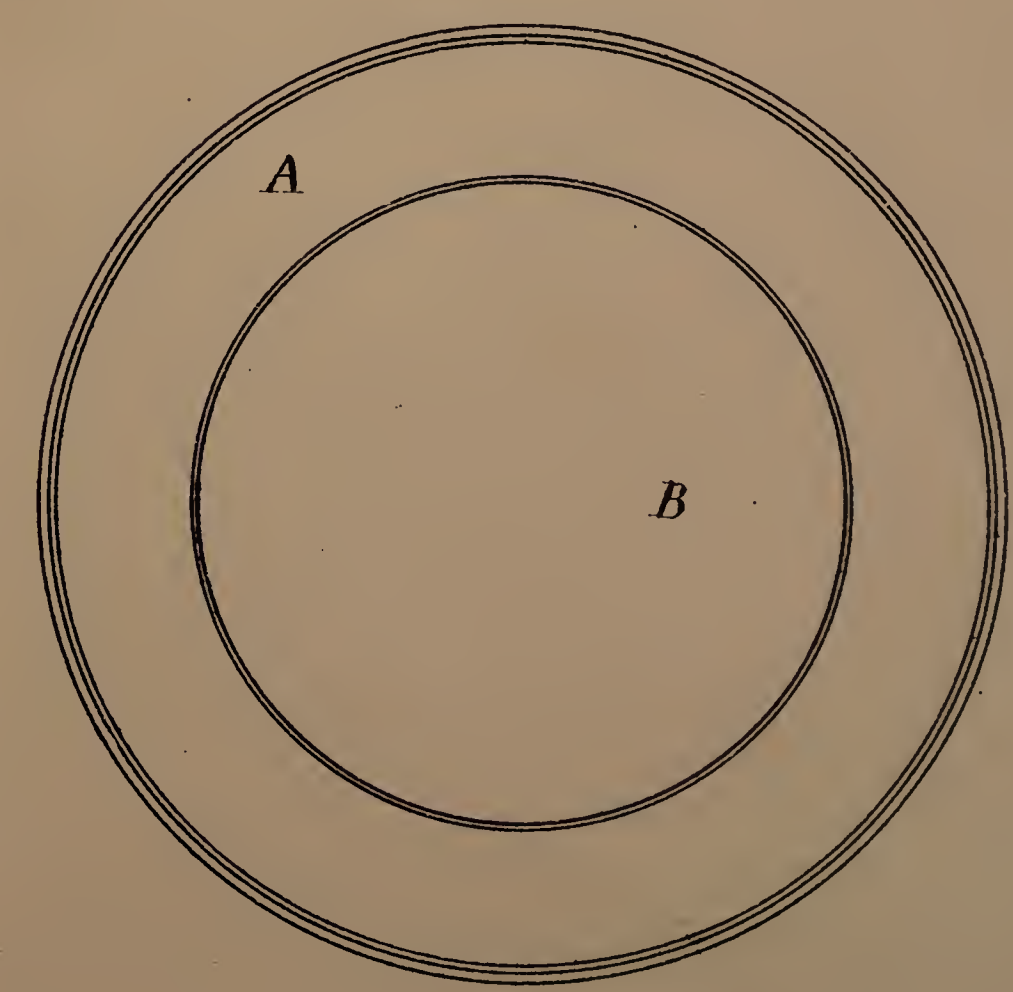
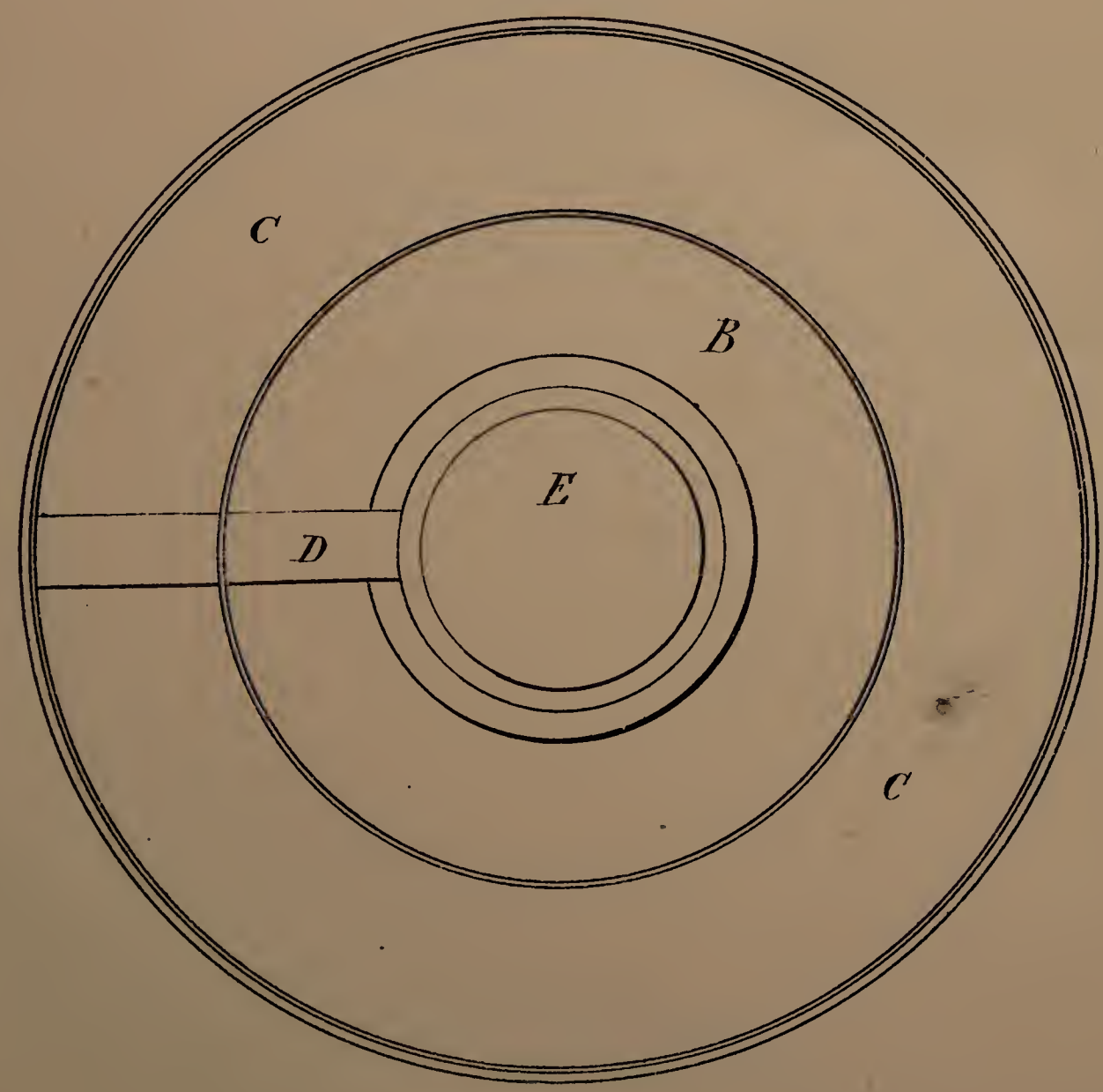
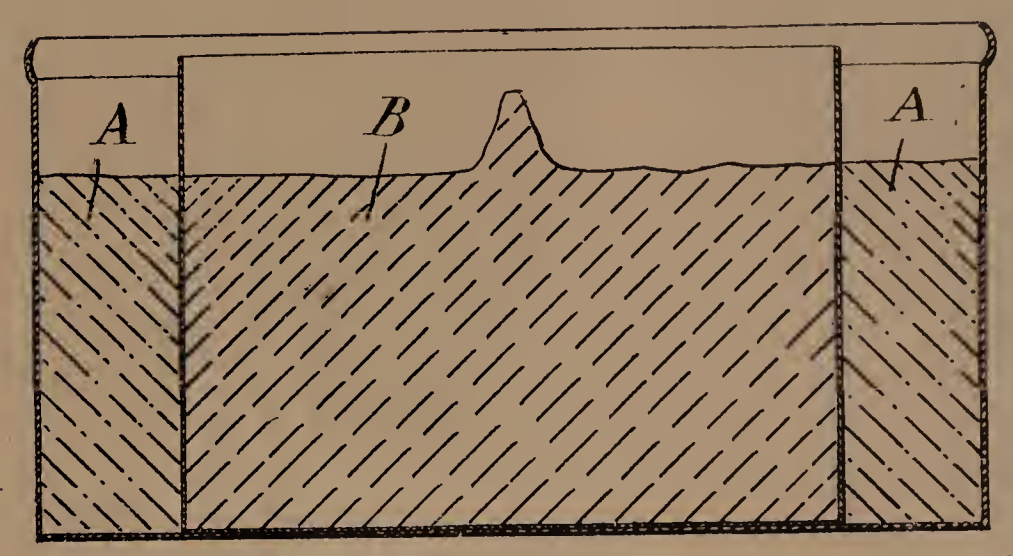


Fig. 1.



[This Drawing is a reproduction of the Original on a reduced scale.]

